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10/585,506	05/09/2007	Gary Fairless Power	5141-00003	3651

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EXAMINER
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SLOMSKI, REBECCA

ART UNIT	PAPER NUMBER
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2877

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06/10/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/585,506	<b>Applicant(s)</b> POWER ET AL.	
	<b>Examiner</b> REBECCA C. SLOMSKI	<b>Art Unit</b> 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 42-55 and 57-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 42-55 and 57-67 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

DETAILED ACTION

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims **42-57** are rejected under 35 U.S.C. 103(a) as being unpatentable over Topcon EP 1291199 A1.

1. With respect to claims **42** and **57**, Topcon discloses a card decision apparatus comprising:

- Apparatus or method for inspection of at least one security article (Abstract)
- A light source for directing a beam of light onto said diffractive optical projection element which transforms the beam into a patterned beam of light that is reconstructed at a particular position in space to form a projected image (Figure 8(a), Figure 8(b), P.0032)
- At least one optical detection device located at the position at which the patterned beam of light is reconstructed to form the projected image (Figure 8(a))

However, Topcon fails to disclose the diffractive optical element is provided in a substantially transparent or translucent portion.

It would have been obvious to one of ordinary skill in the art to use transmission rather than reflection since these are art recognized equivalents for the detection art. Substituting

transmission for reflection in holographic elements would be within routine skill in the art, as evidenced by U.S. Patent #7,123,413 (Col.16, l 1—16) and Takahashi U.S. Patent #7,130,119 (Col.16, l 1-7), and would be desirable depending on the type of object to be inspected. A transmissive hologram would allow the pattern to be detected with lower wavelength sensitivity.

2. With respect to claims **43**, **44**, and **45**, Topcon discloses all of the limitations as applied to claim 42 above. In addition, Topcon discloses:

- The light source is arranged to direct substantially collimated beam of light onto the diffractive optical projection element (P.0029)
- Light source is a point light source (P.0029)
- Light source is a laser (P.0029)

3. With respect to claim **46**, Topcon discloses all of the limitations as applied to claim 42 above. In addition, Topcon discloses:

- The optical detection device is arranged to detect the amplitude of different parts of the patterned light beam forming the projected image (P.0038)

4. With respect to claims **47** and **48**, Topcon discloses all of the limitations as applied to claim 42 above. However, Topcon fails to specifically disclose one or more photodiodes or a charge coupled device. Instead, Topcon a line sensor and light receiving elements.

It would have been obvious to one of ordinary skill in the art to use photodiodes and a CCD since these are well known detection tools in the art with a line sensor and light receiving elements being art recognized equivalents.

Using photodiodes or a CCD would be desirable to simplify the device because of the ease in acquiring them due to popularity and the standard understanding of their use.

5. With respect to claim **49**, Topcon discloses all of the limitations as applied to claim 42 above. However, Topcon fails to disclose the light source is positioned on one side of a security article and the detection means is positioned on the opposite side of the security article such that the light passes through the diffractive optical projection element so that the incident beam is transformed into patterned beam on the opposite side of the document and projected onto the optical detection device.

As noted above in claim 42, it would have been obvious to one of ordinary skill in the art to use transmission rather than reflection inherently requiring the detector and light source positioned on opposite sides of the security article since reflective and transmissive holograms are art recognized equivalents. Substituting transmission for reflection in holographic elements would be within routine skill in the art, as evidenced by U.S. Patent #7,123,413 (Col.16, 1 —16) and Takahashi U.S. Patent #7,130,119 (Col.16, 1 1-7), and would be desirable depending on the type of object to be inspected. Detecting the hologram from the opposite side of the security document as the light source allows the holographic pattern to be detected with lower wavelength sensitivity.

6. With respect to claim **50**, Topcon discloses all of the limitations as applied to claim 42 above. In addition, Topcon discloses:

- The diffractive optical element is provided on an underlying reflective surface and the light source and optical detection device are positioned on the same side of the security article such that the optical detection device detects a reflected beam transformed by the diffractive optical projection element into the patterned beam and projected onto the optical detection device (Figure 8(a))

7. With respect to claim **51**, Topcon discloses all of the limitations as applied to claim 42 above. In addition, Topcon discloses:

- The apparatus includes a plurality of optical detection devices (Figure 8(a), light receiving elements, 24c)

8. With respect to claims **52** and **53**, Topcon discloses all of the limitations as applied to claims 42 and 54 above. However, Topcon fails to specifically disclose a plurality of light sources or that each of the light sources causes the patterned beam to be diffracted at a slightly different point on the optical detection device, creating multiple signals.

It would have been obvious to one of ordinary skill in the art to use a plurality of light sources to create multiple signals, rather than moving a single light source as Topcon discloses, since a plurality of light sources could remain stationary and would have fewer

moving parts, with the advantage of fewer errors possible and a lower cost system.

Additionally, different light sources could be used, adding more data for particular applications.

9. With respect to claim **54**, Topcon discloses all of the limitations as applied to claim 42 above. In addition, Topcon discloses:

- The light source is moving light source which produces an incident light beam that scans across the diffractive optical projection element to create multiple signals at the optical detector (P.0034, P.0041)

10. With respect to claims **55**, Topcon discloses all of the limitations as applied to claim 42 above. In addition, Topcon discloses:

- A processor for processing signal from the optical detection device, wherein the processor analyses multiple signals to differentiate constructive diffraction produced by the diffractive optical element from a random or diffuse scattering of light (P.0035 and P.0037)

Claims **58-63**, **66** and **67** are rejected under 35 U.S.C. 103(a) as being unpatentable over Topcon EP 1291199 A1 in view of Tompkin et al. U.S. Publication 2002/0154290.

11. With respect to claims **60** and **66**, Topcon discloses all of the limitations as applied to claim 42 above. However, Topcon fails to disclose a detector for detecting the presence of security documents, a window locator for locating a window in the

security document incorporating a diffractive optical element, and a document processing means for processing the security document according to the signal from the optical detection device.

Tompkin discloses:

- An edge detector for detecting the presence of a security document and for locating a diffractive optical element (P.0059, wherein reading device determines that a coin is present and what size coin, i.e. location of the edge of the coin, is present for correct alignment of source and detector apparatus)
- A processor for processing and analyzing signals from the optical detection device (P.0058)
- A document processing means for processing the security documents according to the signals from the optical detection device (P.0058)

It would have been obvious to one of ordinary skill in the art at the time of the invention to detect the presence and location of a security document with diffractive optical element since this would be inherent in Topcon since otherwise it would be unknown when to perform the decision evaluation. It has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. It would have been obvious incorporate the detector for locating the presence and location of security document with diffractive optical element



since it would speed up the inherent steps which Topcon necessarily would have to perform prior to testing.

12. With respect to claims **58**, **59** and **61**, Topcon discloses all of the limitations as applied to claims 42, 57 and 60 above. However, Topcon fails to disclose a signal generated when the absence or poor quality of a diffractive optical element is detected and wherein the security article is isolated or marked when the signal is generated.

Tompkin discloses a coin with diffraction structures comprising:

- A signal is generated when the absence of a diffractive optical element is detected in a security article (P.0058, wherein signal = electrical signal to reject)
- The security article is isolated when the signal is generated (P.0058)

It would be desirable to include the rejection system of Tompkin in the security system of Topcon since this would prevent the false security items from circulating with the passing documents.

13. With respect to claims **62** and **63**, Topcon in view of Tompkin discloses all of the limitations as applied to claim 60 above. However, Topcon fails to disclose determining the quality of the diffractive optical projection element by inspection of the projected image formed by the patterned beam and to output an accept or reject signal.

Tompkin discloses:

- Determining the presence of a diffractive optical projection element in the window (P.0058)
- Determining the quality of the diffractive optical projection element by inspection of the projected image formed by the patterned beam and outputting an accept or reject signal based on the quality of the diffractive optical projection element (P.0058)

However, Topcon and Tompkin fail to specifically disclose using a process logic controller or microprocessor to determine the presence of a diffractive optical projection element in the window.

It would have been inherent that Tompkin uses a microprocessor, or another equivalent computational apparatus, to determine the presence/quality of the diffractive optical projection element since he uses electrical signals as outputs of measuring and provides for an autonomous system, not necessitating user interaction for decision making (P.0007, P.0020).

Additionally, it would have been desirable to use a processor and subsequently accept or reject based on the measured projected image as in Tompkin since this would automate the process, which is within ordinary skill in the art, as well as provide a useful output by categorizing the coins through accept or reject signals for further processing.

14. With respect to claim **67**, Topcon in view of Tompkin discloses all of the limitations as applied to claim 60 above. However, Topcon fails to disclose a document processing means including a document sorter.

Tompkin discloses a coin with diffraction structures comprising:

- The document processing means includes a document sorter (P.0053 and P.0058)

It would be desirable to include the sorting system of Tompkin in the security system of Topcon since this would produce a useful outcome from determining the authenticity of the coins, allowing one to select a particular identity or to discard false documents.

Claims **64** and **65** are rejected under 35 U.S.C. 103(a) as being unpatentable over Topcon EP 1291199 A1 in view of Tompkin et al. U.S. Publication 2002/0154290 and further in view of Walker et al. U.S. Patent #6,111,953.

15. With respect to claims **64** and **65**, Topcon in view of Tompkin discloses all of the limitations as applied to claim 60 above. However, Topcon fails to disclose a barcode printer to print an accept or reject code on the security document and to process the document in accordance with the code printed.

Walker discloses an authenticating document apparatus comprising:

- A barcode printer, wherein the barcode printer prints a security code on a security document in accordance with the output of the processor (Col.4, l 54-60)
- The document processing means processes the security documents in accordance with the code printed by the barcode printer (Figure 4)

It would have been obvious to one of ordinary skill in the art, that after verification the authenticity code (accept or reject) is printed onto the document as in Walker, in order that it is not necessary to repeat the authentication for each subsequent processing step. This saves time from repeating authentication and allows the security document to be processed at a location separate from the verification processing. Additionally, it would have been obvious to further process the security document in accordance with the printed security code since this would provide a useful output of the verification steps.

### ***Response to Arguments***

Examiner thanks the applicant for amendment to the title and for the cancellation of claim 56. The objections to the specification and to claim 56 have been withdrawn.

Applicant's arguments filed 02/25/09 have been fully considered but they are not persuasive.

With respect to applicant's arguments on pages 8-10 regarding the hologram of Topcon not reading on the diffractive optical projection element of the current applicant, are

not persuasive. The applicant states that a hologram does not produce a patterned beam of selected design. The examiner disagrees. The Penguin English dictionary states that a hologram is "a pattern produced by the interference between one part of a split beam of coherent light and the other part of the same beam reflected off an object". The hologram of Topcon satisfies all of the limitations of the diffractive optical projections element of the current application. The applicant specifically says that Topcon's hologram does not "transform a beam of light into a patterned beam of light", however the examiner disagrees. The pattern produced by a hologram is made up of a pattern of short light beams at the spot of reconstruction, as required by the claim limitations. Additionally, the examiner specifically calls attention to the evidential support as noted above in Dickson that a diffractive optical element is satisfied by a holographic optical element, which, as noted by Takahashi, a holographic optical element is a transmission hologram or reflection hologram. For these reasons the examiner maintains the rejection of claims as unpatentable over Topcon.

With respect to the applicant's arguments on page 10, regarding why substituting a transmission element for a reflection element would be obvious to one of ordinary skill in the art, the examiner draws attention again to Dickson and Takahashi who specifically disclose substituting transmitting and reflecting optical elements, diffractive elements, and holograms for one another. It has been held that the test for obviousness is not whether the features of one reference may be bodily incorporated into the other to produce the claimed

subject matter but simply what the combination of references makes obvious to one of ordinary skill in the pertinent art. In re Bozek, 163 USPQ 545 CCPA 1969. It is with this understanding that a transmissive hologram is simply not cut and pasted in place of the reflective hologram of Topcon, but rather the idea of the transmissive hologram is incorporated into the invention, including the transmissive hologram and all the required changes to the invention that that would bring.

With respect to applicant's arguments on page 11, regarding Topcon in view of Tompkins failing to disclose a window locator for locating a window in the security document incorporating the diffractive optical projection element, the examiner points out the rejection of claim 60 above with Tompkin disclosing locating a diffractive optical element. With the discussion above regarding the obviousness of that the diffractive optical element being transmissive, i.e. located in a transmissive window, it would follow from this reasoning that the locator of the diffractive optical element through the alignment of Tompkin, inherently locates the window containing the diffractive optical projection element. Additionally, it should be noted that the limitation of a "DOE which may be viewed both in reflection and transmission" is not in the claim limitations. For these reasons, the rejection of claims as being unpatentable over Topcon in view of Tompkins is maintained as noted above.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBECCA C. SLOMSKI whose telephone number is (571)272-9787. The examiner can normally be reached on Monday through Thursday, 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory J. Toatley, Jr./  
Supervisory Patent Examiner,  
Art Unit 2877  
10 June 2009

Rebecca C. Slomski  
Patent Examiner

rsc